

技术及应用

高分辨针孔SPECT三维图像重建的实现

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摘要 采用一种新颖的查找表法来实施有序子集期望值最大化(OSEM)的针孔SPECT图像重建算法, 有效地将针孔响应修正包含在查找表中, 进而实现高分辨针孔SPECT的三维图像重建。标准Jaszczak模具的成像实验结果表明: 该方法不但能显著减少图像重建过程的计算时间和内存占用, 且能显著改善重建图像的分辨率。因此, 查找表法是能够快速实现针孔SPECT OSEM图像重建算法, 并能将针孔响应修正包含在查找表中以获取高分辨断层图像的有效方法。

关键词 [针孔SPECT图像重建](#) [OSEM算法](#) [针孔响应修正](#)

分类号

Implementation of High Resolution Pinhole SPECT 3D Image Reconstruction

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Abstract In order to achieve high-resolution pinhole SPECT image reconstruction, a novel lookup table (LUT) method was implemented in the ordered subsets expectation maximization (OSEM) algorithm including an effective compensation of the pinhole response. A standard Jaszczak phantom was used to evaluate the reconstruction algorithm. The results show that the OSEM algorithm with the LUT method can significantly reduce the CPU time and the usage of memory, and provide significant improvement of the spatial resolution of the reconstructed image. In conclusion, the LUT method with pinhole response corrections in LUT is an effective approach to implement OSEM algorithm for high-resolution pinhole SPECT image reconstruction.

Key words [pinhole SPECT image reconstruction](#); [OSEM algorithm](#); [pinhole response correction](#)

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